



REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-17 are currently being prosecuted. The Examiner is respectfully requested to reconsider her rejections in view of the remarks as set forth below.

Entry of Response

Applicants submit that entry of the present Response and full consideration thereof is appropriate since no amendments are being presented. Accordingly, Applicants request full consideration of the present Response.

Rejection Under 35 USC 102

Claims 1-17 stand rejected under 35 USC 102 as being anticipated by Cheng (U.S. Patent 5,197,858). This rejection is respectfully traversed.

The Examiner states that Cheng shows a variable speed fan having a thermal sensor detecting an environmental temperature, a driving element IC2 driving the fan to a specific speed based on the detected temperature with control elements such as IC31/TR1/TR2 connected between the temperature sensor and the driving element for changing the rotation of the fan by adjusting the first voltage across Rth.

In response to Applicants' previous arguments, the Examiner points out that the thermal resistor has different resistances depending on temperature so that the first voltage varies with respect to temperature and the first voltage is input to control unit IC31 where it is compared to a reference voltage and an output voltage is sent to TR1 which causes the collector current of TR1 to change the speed of the fan. The Examiner states that the rejection stands because the control elements of Cheng adjust the first voltage as recited in the claims.

Applicants wish to clarify the meaning of the adjusting of the first voltage and further explain the object that is attempted with the present invention. Applicants agree that the basic concept of the present invention is similar to that of Cheng where a variable resistance changes

due to temperature and thereby controls the speed of the fan. However, the present application, as described in page 6, lines 16-24, is an attempt to change the range of the reaction of the fan speed to the temperature. As seen in Figs. 3B, 4B and 5B, one curve (A) shows how the fan speed varies over a temperature range if the first voltage of the thermal sensor is not adjusted. The non-adjusted curve would correspond to the related art device shown in Fig. 1 or a device similar to Cheng. However, a second curve (B, C or D) shows how the slope of the original curve can be adjusted so that the range of the speeds of the fan can be changed. The present invention provides various connections which cause the output of the thermal sensor to be adjusted and accordingly causes the slope of the graph to change. This is the heart of the present invention.

For example, in Fig. 3A when voltage V1 is produced by the thermal sensor and compared with reference voltage V2, an output voltage is used to turn on transistor TR1. This causes current flow through the transistor to ground. However, the current flows from the power source through resistor R3, through resistor R5 and through the transistor to ground. It also flows from resistor R3 through thermal sensor Rth to ground. As a result, the voltage V1 is adjusted when the transistor is turned on because resistor R5 is parallel with the thermal sensor and current flows through resistor R5 when the transistor is turned on. Thus, the control element 31 provides a fan control signal, not only in the sense that Cheng does, but also at the same time changes the voltage output from the thermal sensor to adjust the temperature range of the fan, as shown in Fig. 3B.

Applicants agree that Cheng shows the comparison of the output voltage of the thermal sensor with a reference voltage and that this output is used to control the speed of the fan. However, this output does not adjust the first voltage of the thermal sensor and does not change the temperature range of the fan.

Claim 1 specifically describes these features in line 9 by claiming “a control element ... for adjusting a first voltage of the thermal sensor.” The claim also states in the final phrase “to change ... a temperature range of the fan.” Applicants submit that the reference does not teach either of these features and that accordingly claim 1 is allowable.

In the embodiment of Fig. 3A, the parallel connection between the thermal sensor and the resistor R5 is the basis for this adjustment. A similar adjustment is done in the embodiment of Fig. 4A by including a serial connection of resistor R4 and the thermal sensor. The presence of this resistor also adjusts the voltage output of the thermal sensor. In the third embodiment of Fig. 5A a subtraction circuit is used to adjust the first voltage of the thermal sensor. In the fourth embodiment of Fig. 6 a division circuit, a comparison circuit and an output circuit are involved. In each of these embodiments, the output of the thermal resistor is adjusted so that the temperature range of the fan is changed. This feature is not seen in the reference.

Claims 4-6 describe the first embodiment in Fig. 3A. Claim 7 describes the second embodiment in Fig. 4A. Claims 8-10 describe the third embodiment of Fig. 5A and claims 11-13 describe the fourth embodiment of Fig. 6. In regard to claims 7-13, Applicants submit that the Cheng reference does not show these arrangements at all. In regard to claim 6, even if resistor R9 is in parallel with the thermal sensor, it does not accomplish the results specified in the claim. Applicants submit that dependent claims 2-13 are allowable based on their dependency from allowable claim 1 in addition to including other limitations which are not seen in the reference.

Claims 14-17 are all independent claims, each of which include all of the limitations of claim 1. Accordingly, these claims are allowable for the reasons recited above in regard to claim 1. These claims are each specific to one of the four embodiments and recite in the wherein clause in the last part of the claim specific elements which relate to the particular embodiment. Each of these also includes references to changing the temperature range of the fan or changing the fan to full speed. Various elements of each of the embodiments are also recited. Accordingly, Applicants submit that these claims are additionally allowable by reciting the various additional elements of the embodiments and also reciting the result of the connections.

Conclusion

In view of the above remarks, it is believed that the claims clearly distinguish over the patent relied on by the Examiner. In view of this, reconsideration of the rejection and allowance of all of the claims are respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert F. Gnuse Reg. No. 27,295 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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